National Institute of Environmental Health Sciences

Relationship between weather and onset of acute myocardial infarction: Can days of frequent onset be predicted?

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Abstract:

BACKGROUND: The aim of this study was to clarify the relationship between onset of acute myocardial infarction (AMI) and weather conditions, to determine whether days in which AMI onset is likely can be predicted. METHODS and RESULTS: Of the 929 patients admitted to our hospitals in Kagoshima prefecture with AMI, subjects comprised 611 patients. Days of frequent onset (F-days) were defined as days with > or Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 3 patients/day admitted for AMI, with days of non-frequent onset (N-days) defined as days with < 3 patients/day. Meteorological factors were measured, and daily differences in all parameters and intraday temperature differences on the onset day, and 1 and 2 days before onset were calculated. F-days were significantly associated with intraday temperature differences on the onset day (10.3 degrees C vs. 7.9 degrees C, pEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.005), 1 day before onset (10.7 degrees C vs. 7.9 degrees C, pEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.002), and 2 days before onset (11.3 degrees C vs. 7.9 degrees C, pEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.0001). A cutoff intraday temperature difference of > or Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 9.4 degrees C on 1 and 2 days before onset was predictive of F-days with 89% sensitivity and 87% specificity. CONCLUSIONS: Intraday temperature differences offer a powerful predictor of F-days. Onset of AMI can be predicted based on weather conditions over the preceding 1-2 days.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Meteorological Factors, Precipitation, Solar Radiation, Temperature

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Japan

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect

Cardiovascular Effect: Heart Attack

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content